



Payments for environmental services in Indonesia: What if economic signals were lost in translation?



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ABSTRACT

This article provides an analysis of a payment for environmental services (PES) scheme in the Cidanau watershed, Indonesia. It contributes to the debate on the alleged effectiveness of such economic incentives to actually change decisions among land users. Building on the standard PES theory of change, one would assume that farmers respond to payments and change their land use decisions accordingly for the delivery of environmental services. However, at the project level the impacts of economic incentives depend on how the signal is transmitted to decision-makers. An extensive household survey was undertaken among 270 participating farmers in order to investigate these assumptions. Results indicate that farmers join the scheme for intrinsic motivations rather than because of economic incentives. Besides, the scheme does not target farmers whose decisions could be changed for the sake of service provision. Finally, farmer group leaders display disproportionate power of decision while individual farmers have a low level of understanding of the PES programme. As a consequence, land use patterns might not depend on the economic incentive only; rather they are likely to be determined by the local social context, traditions and economic dependency on forests. This in turn casts some doubts on the strong (yet contested) economic assumptions that underlie the emergence of PES schemes and on their modus operandi in developing countries.

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Introduction

Water problems have been partially attributed to deforestation and forest degradation in many watersheds (FAO, 2008). Against this background, mechanisms based on regulation, economic incentives or the provision of information, are intended to “influence individual or organizational behaviour variables that enter into a [...] party’s calculus of the costs and the benefits of compliance” (Cohen, 2006: 32).

In an effort to compare these mechanisms, part of the scientific community increasingly alleges that market-based instruments (MBIs) have a comparative advantage when sending economic signals to change behaviour and to secure positive environmental outcomes (Stavins, 2001). Indeed, many contend that market prices and economic incentives have the greatest ability and flexibility

to cost-efficiently help reach equilibrium situations in a voluntary manner without coercion (Hanley et al., 2012; Pirard, 2012).

Payments for environmental services (PES), commonly qualified as MBIs, have been promoted as innovative tools for sustainable environmental management (Ring and Schröter-Schlaack, 2011; Vatn et al., 2011). Based on the perception that other conservation approaches, including coercive measures, had failed to deliver (Stavins, 2001; Ferraro and Simpson, 2002), such MBIs were thus moved to the front stage.

While the notion of PES is difficult to capture, with many definitions and means of implementation (Wunder, 2005; Muradian et al., 2010; Lapeyre and Pirard, 2013), PES are understood in this article as policy instruments that (i) distribute economic incentives to the providers of environmental services (carbon sequestration, regulation of the water cycle, biodiversity, etc.) with (ii) associated conditions based on either actions or delivered environmental outcomes.

Any program, be it for development, social, or environmental purposes, is actually expected to affect outcomes through a causal chain (Chen, 2005; White, 2009). The intervention, through project inputs (e.g. a sensitization campaign), will first affect variables acting as mechanisms for change. These ‘mediators’ are situated

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on the causal pathway between the policy and program impacts. For instance, motivation to quit smoking might increase after an anti-tobacco campaign, and in turn this increased motivation will induce smokers to actually quit. As such, these variables mediate between the intervention and the outcomes along the causal chain. Besides, moderator factors, not directly affected by the specific policy under scrutiny, may also affect program outcomes but are considered extraneous to the intervention. These moderators include age, education, income, personality, gender, etc, which may explain differences in change and outcomes.

In this context, evaluating failure or success of a PES intervention requires analysis and assessment of its theory of change by mapping out the causal chain and by rigorously examining the assumptions behind (White, 2009).

The alleged comparative strength attributed to PES programs, namely their capacity to cost-effectively trigger environmentally optimal decisions, is based on several underlying assumptions proposed in the standard economic literature (Engel et al., 2008; Collier et al., 2010). When undertaking rational choices, economic agents are indeed assumed to be capable of maximising their utility based on available information on costs and benefits, stable preferences and externally constrained budget. As stated by Gneezy et al., 2011 p. 191, “economists often emphasize that ‘incentives matter’. The basic ‘law of behavior’ is that higher incentives will lead to more effort and higher performance”. Building on this theory of change, the rational view of PES alleges that such economic instrument, through payments, effectively modifies actors’ harmful strategies towards environmental-friendly ones.

Yet one can wonder whether this causal pathway actually materializes in real-life situations where underlying assumptions for the intervention might not be verified. It is thus relevant to confront causal chains in the standard theory of PES to realities on the ground by paying careful attention to a number of critical elements:

- The governance of the scheme influences the capacity to identify and target the appropriate ES providers whose decisions need to be changed in order to provide the services;
- Limited literacy, bounded rationality and imperfect information sharing might alter ES providers’ ability to understand the economic incentives;
- Bounded self-interest, as opposed to rent-seeking strategies, might alter ES providers’ responses to payments when their motivations go beyond financial aspects (social, ethical motivations).

The PES literature provides increasing evidence on the drivers and motivations that explain ES providers’ responses to payments. Consistent with the standard view, studies have shown the importance of a number of external parameters, including economic ones: household income and livelihood diversification opportunities (Zbinden and Lee, 2005; Bremer et al., 2014), level of payments and opportunity costs (Balderas Torres et al., 2013; Bremer et al., 2014), farm size and land tenure (Zbinden and Lee, 2005; Bremer et al., 2014).

Yet other, non-economic determinants also explain farmers’ decisions in PES, and Kosoy et al. (2008) recommend to “overcome the idea that resource managers follow only an individual rationality prior to deciding whether or not to participate” (p. 2073–2074). Behavioural studies have emphasised that internal factors (habit and cognition) as well as social factors (norms) largely complement external factors when responding to incentives (Prendergrast et al., 2008; Collier et al., 2010). On the one hand, farmers most often display bounded rationality; as a result education (Zbinden and Lee, 2005), the level of literacy and computational capacity (Hayes, 2012; Ferraro, 2008) as well the degree of information sharing and dissemination (Zbinden and Lee, 2005; Kosoy et al., 2008) might explain the extent to which participants enroll in PES and correctly

interpret the contract. On the other hand, farmers in rural settings might display characteristics of bounded self-interest (Shogren, 2012). When deciding about their land use strategies, farmers follow intrinsic pro-environmental and pro-social attitudes (Kosoy et al., 2007; Van Hecken and Bastiaensen, 2010), and are motivated by their social reputation at the neighbourhood level (Chen et al., 2009). Finally, enrolled farmers might also respond differently to incentives depending on how they perceive their involvement and decision-making power within the PES scheme (Zbinden and Lee, 2005; Kosoy et al., 2008; Hayes, 2012).

In sum, a rapidly growing literature on behavioural economics and social psychology increasingly questions the standard economic theory of PES. In this article we contribute to this emerging body of research about the capacity of such economic incentives to eventually change farmers’ strategies. Building on an extensive household survey and qualitative interviews, we specifically question the rational view of PES, and its underlying assumptions (the causal chain), with the study of a payment scheme for watershed services implemented in the Banten province in Indonesia. In particular, two research questions are tackled: first, who participates and does the scheme target the appropriate farmers, i.e. those who would have made different decisions without the scheme, and whose decisions impact the provision of the service? Second, do farmers understand and interpret the intervention properly, i.e. according to the theory of change and objectives initially stated by the payer?

To do so, the article is organized as follows: “Presentation of the case study” section describes the study site, the PES program design and its originally stated theory of change; “Methods” section presents our household survey methodology; “Results” section details empirical results, while “Discussion” section discusses the latter and “Conclusion” section concludes.

Presentation of the case study

General information about the site

The Cidanau river watershed is located on the island of Java (Fig. 1).

It covers 22,036 ha, comprising a plateau of 10,176 ha with the former lake Danau (now a swamp area) and rice fields, and another 11,860 ha with 21 sub-watershed and 4 tributary rivers flowing into the Cidanau river (Budhi et al., 2008).

Land in the watershed is mostly privately owned. According to 2002 figures there were 1806 households living in the watershed, and land cover patterns include forests (58%), paddy fields (28%) swamp forests (5%), swamps (4%) and residential areas (5%) (Fig. 1). Overall, the trend for land conversion remains unclear. Yet, it is usually acknowledged that newly cultivated land, illegal farming and migrations to the area increased in the watershed after the economic crisis in 1997 (Yoshino et al., 2003).

Environmental issues

Decreasing forest cover, land erosion and surface water runoff, causing eutrophication and siltation, have negatively affected the Rawa Danau swamp area and led to lower quality water downstream in the Cidanau river (Yoshino and Ishioka, 2005). Besides, according to statements by local stakeholders (but without scientific evidence) the average debit of the Cidanau river has decreased, especially during the dry season.

As an initial step 9987 ha of upstream lands within sub-watersheds were first declared ‘critical lands’ based on their soil type, vegetation cover and steepness (Budhi et al., 2008). Yoshino and Ishioka (2005) thus made important recommendations to

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